



# Idle Free Corridors

Implementation Meeting

April 24, 2004

New York, NY

# Why Idling?

- Environmental benefits: reductions of NO<sub>x</sub>, PM, CO, CO<sub>2</sub>, and air toxics
- Economic benefits: savings on fuel, maintenance, engine life; decreased dependence on oil imports
- Cost/Benefit: \$1,500 (rail) to \$2,500 (truck) per NO<sub>x</sub> ton reduced

# Truck/Locomotive Idling



- Truck Top 3 Reasons:
  - Climate Control (AC, heat)
  - Power accessories (e.g., TV)
  - Protect engine in cold weather
- Locomotive Top 3 Reasons
  - Protect engine in cold weather
  - Readily available engine
  - Habit/custom

# Idling Emission Impacts

- Long Haul Trucks:
  - NOx: 180,000 tons per year
  - PM: 5,000 tons per year
  - CO2: 11 million tons
  - Fuel: 1 billion gallons
- Switch Yard Locomotives
  - NOx: 13,000 tons per year
  - PM: 430 tons per year
  - CO2: .75 million tons
  - Fuel: 65 million gallons

# Other Impacts

- Air toxics (formaldehyde and trace metals)
- Pollutants in environmental justice areas (inner-city rail yards)
- Noise pollution
- Increased maintenance on engines
- Decreased engine life

# Alternatives

- Change Behavior/Provide Incentives
  - Difficult to change behavior when idling is necessary to provide heat or air conditioning to rest comfortably
- State Anti-Idling Laws
  - Difficult to enforce; unfair to impose when alternatives are unavailable
- Idle Reduction Technologies
  - Mobile & Stationary devices (see handout in folder)

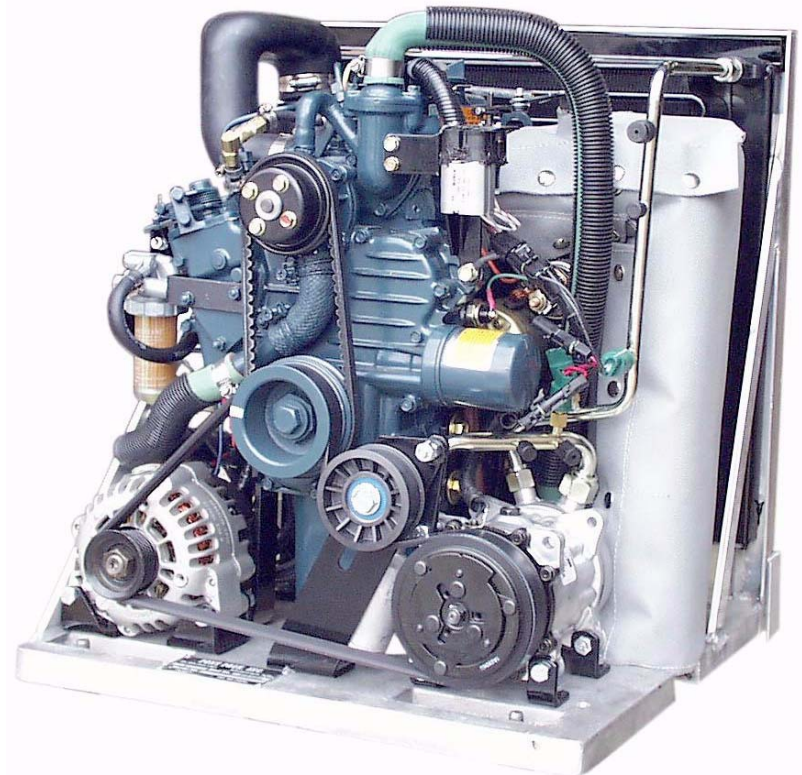
# Truck Idle Reduction Technologies



- Automatic engine shut-down systems
- Diesel Fuel Fired Heaters
- Auxiliary Power Units/Generator Sets
- Truck Stop Electrification (on-board HVAC + electrical connection)
- “Advanced” TSE (external unit only)

# Auxiliary Power Units

- What is it?
  - Small diesel powered combustion engine, ~10 hp, EPA certified non-road engines
- What does it do?
  - AC, heat and power for auxiliaries
- Cost: \$5,000-\$7,000
- Issues:
  - Weight, maintenance, extra tax, costly
- Major manufacturers:  
include Pony Pack (see picture), Rig Master, and Teleflex

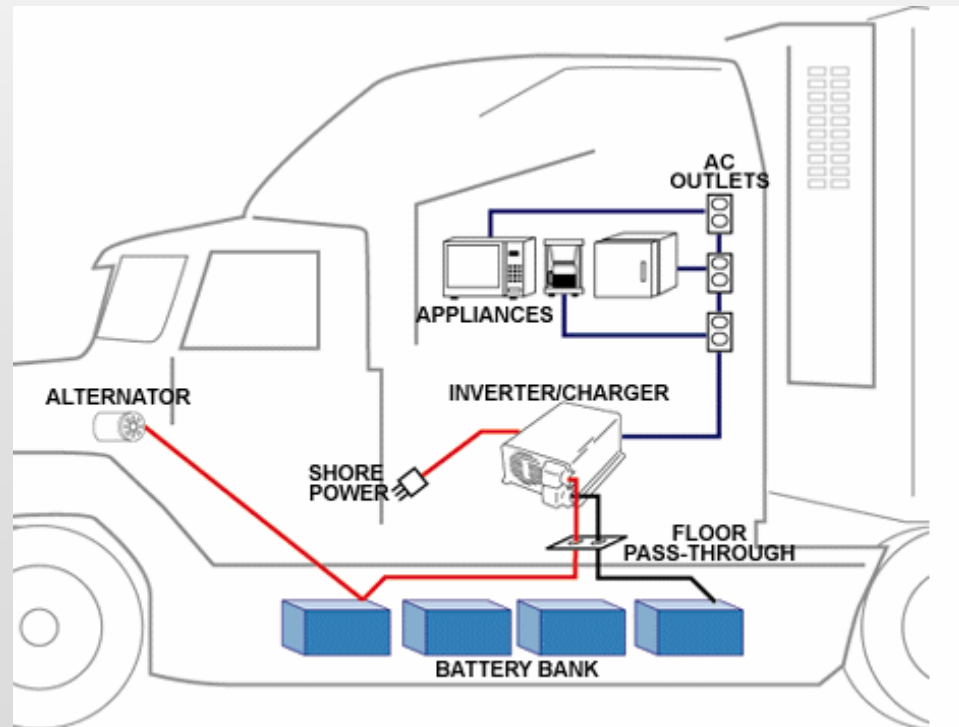




# Truck Stop Electrification (Shore Power)

- What is it?
  - Inverter/charger & electric HVAC; connection to external electrical grid
- What does it do?
  - Provides power for HVAC and auxiliaries
- Cost: Inverter/Charge + electric HVAC (\$4,000); external connection (\$2,500/space)
- Issues
  - Requires modifications to truck, external connection not readily available

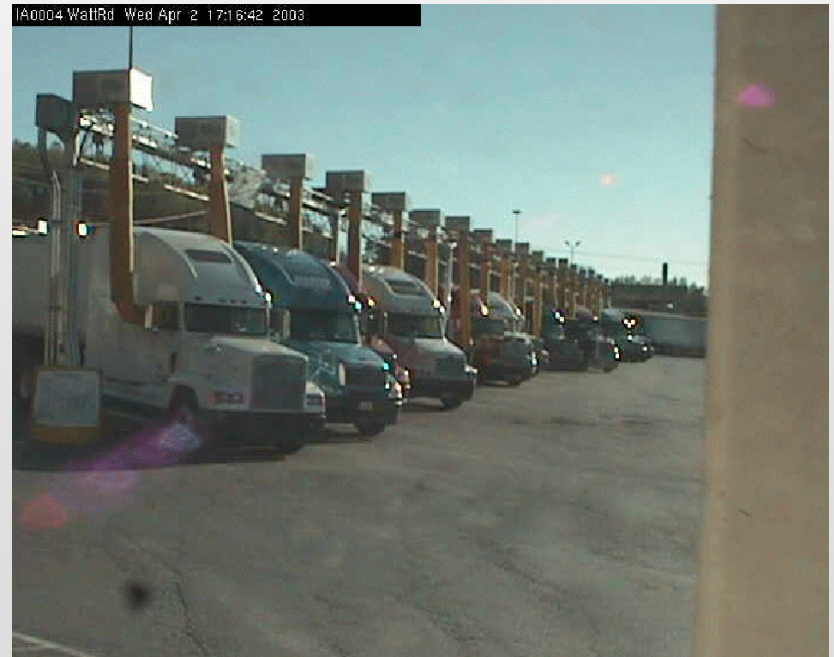
- Major manufacturers:  
Xantrex (see picture below),  
Dometic/Cab Comfort, Taylor, Phillips,  
Antares



# Advanced TSE (Rental)

- What is it?
  - Electric HVAC system suspended above trucks
- What does it do?
  - Provides power for HVAC and auxiliaries; cable, telephone
- Cost: \$10,000 per space (50 space min); \$1.25-\$1.50 hourly charge
- Issues:
  - Costly; available in only a few locations

- Major Manufacturer: IdleAire Technologies, Inc.



# Locomotive Idle Reduction Technologies



- Automatic Shut Down/Start Up System
  - Maintains all vital engine systems by turning engine on and off based on temperature and/or time
  - ZTR Control Systems
  - \$7,500
- APU
  - Maintains all vital engine systems
  - CSXT
  - \$35,000-\$40,000
- Diesel Driven Heating System
  - Maintains all vital engine systems
  - Kim Hotstart Manufacturing
  - \$27,000-\$29,000

# Barriers

- Weight of APUs (250-500 lbs)
- Tax on APUs (FET 12%)
- Maintenance of APUs
- APUs too expensive
- TSE not readily available
- TSE too expensive

# EPA-DOT-DOE Response

- Weight waiver of 250 lbs in Energy Bill
- TSE projects eligible for CMAQ funds
- Grant program to assist truck fleets in purchase of mobile idle reduction technology
- Demonstration projects for locomotives
- Demonstration projects for TSE

# State Wide Truck Parking



STATE	TOTAL TRUCK PARKING SPACES (public & private)
New York	8,227
New Jersey	4,397

# State Wide Truck Impacts: Fuel



<b>STATE</b> (if 50% of all parking spaces had idling trucks)	<b>FUEL</b> (million gal/yr)
<b>New York</b>	10 M
<b>New Jersey</b>	5 M

# State Wide Truck Impacts: NOx



<b>STATE</b> (if 50% of all parking spaces had idling trucks)	<b>NOx</b> (tpy)
<b>New York</b>	1,800
<b>New Jersey</b>	950



# State Wide Truck Impacts: PM



STATE (if 50% of all parking spaces had idling trucks)	PM (tpy)
New York	50
New Jersey	26

# Railroad Mileage per State



STATE	Mileage
New York	3,788
New Jersey	922

# East Coast Railroads



RAILROAD	# LOCOMOTIVES
Norfolk Southern	3,455
CSX Transportation	3,360
Canadian National/Illinois Central	296
Canadian National/Grand Trunk Western	109

# Switch Yard Locomotives (CSXT Only)



STATE	# SWITCHERS
New York	79
New Jersey	9

# Switcher NOx Impact (CSXT Only)



State	Fuel (gal/yr)
New York	948,000
New Jersey	108,000

# Switcher NOx Impact (CSXT Only)



STATE	NOx tpy
New York	205
New Jersey	23

# Switcher PM Impact (CSXT Only)



STATE	PM tpy
New York	7
New Jersey	.7

# Potential Truck Stop Projects



- Selection Criteria:
  - Site Density: number of other truck stops nearby
  - Usage: current demand/supply ratio
  - Growth: estimated annual % increase in demand
  - Capacity: <25, 25-50, 51-99, 100-199, 200+)
  - Ozone and PM Status: attainment, maintenance, non-attainment
  - Census: population density within 0.5 mile radius
  - Regulation: presence/absence of state or local anti-idling law
- Priority Areas
  - See handout in folder



# Objective

- Build idle reduction projects at key locations along major transportation routes
  - Bring together a team to get this done: EPA, DOT, DOE, state/local government, energy provider, technology manufacturer, truck/rail companies, truck stops, community groups, others.